

PT-TFM: Nucleus™, Dual-Channel Film-Thickness Monitor

The #1 Thin-film Vacuum Coating Source

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## The New Wave in Film Thickness Monitoring

Designed with the same level of dependability and precision of Nucleus Plus™ system, the Nucleus™ PC- Based Film Thickness Monitor provides a basic feature-set for users who do not require process or temperature control. The Nucleus™ offers the same innovative monitoring capability of the Nucleus Plus™, yet the technology has been streamlined to provide a more compact, low-cost unit.

Like the Nucleus Plus™, the Nucleus™ is a temperature measuring film-thickness monitor that surpasses conventional monitors, which are blind to thermal changes in a monitoring crystal. The combination of frequency and temperature measurement allows unprecedented accuracy in real-time rate and film-thickness monitoring.

## Why measure temperature?

The frequency change of a crystal by process heating can easily be equal to the frequency change caused by coating. In normal operation there is a built-in 10% error in most rate measurements. In the worst case, the error rate can reach 100% - calling into question the entire purpose of the measurement process.

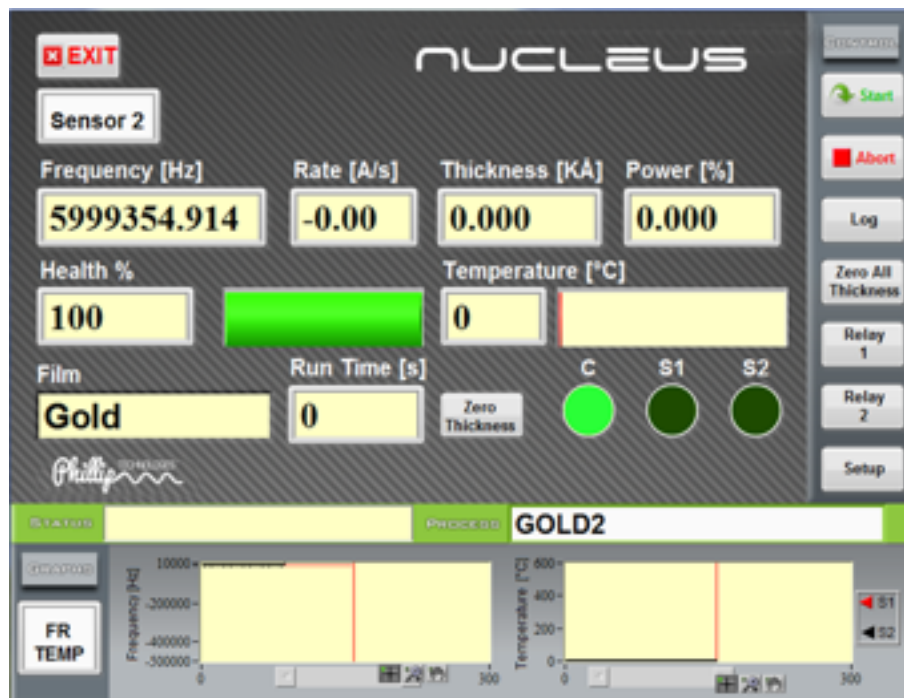
While the Nucleus™ is compatible with industry standard crystal sensors, the unit was also specifically created to be paired with Phillip Technologies's Proton Plus™ in combination with AT, RC™, or MegaQuartz (MQ™) 6 MHz crystals for achieving a degree of precision never before imagined in the world of thin film.



Front of the Nucleus™ showing the RS-232 port, sensor lights, and power input.



Back of the Nucleus™ showing two BNC inputs, two type K TC inputs, and serial I/O



Screenshot of the Nucleus™ Process control system. All functions are accessed through the, included, PC-Based software.

# Specifications

## Features

Temperature measuring quartz oscillator

Communicates with Phillip Technologies's Nucleus Process Control™ software

Real time graphing of temperature and frequency alongside corresponding rate and thickness values

Shutter on/off support (relays)

Widely expandable systems - up to 255 Nucleus™ monitors can be networked

All connecting cables, software, and instruction manual included

## Optional Accessories

### F vs. T upgrade:

Temperature vs. frequency correction upgrade to mitigate erroneous readings often caused by overheating the sensor head in hot processes. \$250 —downloadable from your user account at [PhillipTech.com](http://PhillipTech.com)

## Ordering Information

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## Specifications

Drives crystals 1-10 MHz, 1-200 Ω, any type (Quartz, MegaQuartz™)

Two type K thermocouple input; accurate to +/-0.25°C

Two high resolution sensor head input accurate up to .001 Hz

24 volt power (supplied)

Industry Standard RS232 communication protocol

4.5" X 2.5" X 1"

Two user-selectable relays

Two status LEDs



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